Lower Respiratory Tract Infections

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NICE Guidelines on Respiratory Tract Infections

Why?

- RTIs are common
- Complications of RTIs are less common
- We prescribe more antibiotics
- Resistance rates strongly relate to antibiotic use in primary care
- There is a lack of evidence in this area
- “Safety net” approach

The Numbers

- URTI occurs at a rate of 2-5/adult/year
- £96.5 million spent on non-prescription liquid cough medicines (UK, 2001)
- Costs the UK economy £979 million / year
- £875 million loss of productivity
- £104 million costs to healthcare and for non-prescription medications

PCT Savings

- Antibiotics - £59 000[1]
- Cost and volume savings
- Cost per item/per dose to that of best quartile of PCTs
- Volume – reduce number of weighted items per patient to median of all PCTs

1. Primary Care Prescribing: a bulletin for Primary Care Trusts. The Audit Commission 2003.

Respiratory tract infections – antibiotic prescribing | Care pathway for respiratory tract infections (RTIs)

Care pathway for respiratory tract infections (RTIs)

At the first face-to-face contact in primary care, including walk-in centres and emergency departments, offer a clinical assessment, including:

- history (presenting symptoms, use of over-the-counter or self medication, previous medical history, relevant risk factors, relevant comorbidities)
- examination as needed to establish diagnosis.

Address patients' or parents'/carers' concerns and expectations when agreeing the use of the three antibiotic strategies (no prescribing, delayed prescribing and immediate prescribing).

Agree a no antibiotic or delayed antibiotic prescribing strategy for patients with acute otitis media, acute sore throat/acute pharyngitis/acute tonsillitis, common cold, acute rhinosinusitis or acute cough/acute bronchitis.

However, also consider an immediate prescribing strategy for the following subgroups, depending on the severity of the RTI.

The patient is at risk of developing complications.

No antibiotic prescribing
Offer patients:

- reassurance that antibiotics are not needed immediately because they will make little difference to symptoms and may have side effects, for example, diarrhoea, vomiting and rash
- a clinical review if the RTI worsens or becomes prolonged.

Delayed antibiotic prescribing
Offer patients:

- reassurance that antibiotics are not needed immediately because they will make little difference to symptoms and may have side effects, for example, diarrhoea, vomiting and rash
- advice about using the delayed prescription if symptoms do not settle or get significantly worse
- advice about re-consulting if symptoms get significantly worse despite using the delayed prescription.

The delayed prescription with instructions can either be given to the patient or collected at a later date.

No antibiotic, delayed antibiotic or immediate antibiotic prescribing
Depending on clinical assessment of severity, also consider an immediate prescribing strategy for:

- children younger than 2 years with bilateral acute otitis media
- children with otorrhoea who have acute otitis media
- patients with acute sore throat/acute pharyngitis/acute tonsillitis when three or more Centor criteria[1] are present.

Immediate antibiotic prescribing or further investigation and/or management
Offer immediate antibiotics or further investigation/management for patients who:

- are systemically very unwell
- have symptoms and signs suggestive of serious illness and/or complications (particularly pneumonia, mastoiditis, peritonsillar abscess, peritonsillar cellulitis, intraorbital or intracranial complications)
- are at high risk of serious complications because of pre-existing comorbidity. This includes patients with significant heart, lung, renal, liver or neuromuscular disease, immunosuppression, cystic fibrosis, and young children who were born prematurely
- are older than 65 years with acute cough and two or more of the following, or older than 80 years with acute cough and one or more of the following:
  - hospitalisation in previous year
  - type 1 or type 2 diabetes
  - history of congestive heart failure
  - current use of oral glucocorticoids.

Offer all patients:

- advice about the usual natural history of the illness and average total illness length:
  - acute otitis media: 4 days
  - acute sore throat/acute pharyngitis/acute tonsillitis: 1 week
  - common cold: 1½ weeks
  - acute rhinosinusitis: 2½ weeks
  - acute cough/acute bronchitis: 3 weeks
- advice about managing symptoms including fever (particularly analgesics and antipyretics). For information about fever in children younger than 5 years, refer to 'Feverish illness in children' (NICE clinical guideline 47).

[1] Centor criteria are: presence of tonsillar exudate, tender anterior cervical lymphadenopathy or lymphadenitis, history of fever and an absence of cough.

NICE clinical guideline 69 | Quick reference guide

Clinical Assessment

Address concerns and expectations of patient/parent/carer when agreeing to one of three antibiotic prescribing strategies

acute otitis media/acute sore throat/acute pharyngitis/acute tonsillitis/acute rhinosinusitis/common cold/acute bronchitis/acute cough

Risk of complications

Consider immediate prescription

Immediate antibiotics

No prescription

Delayed prescription

Children < 2y bilateral AOM

Children otorrhoea + AOM

Acute sore throat/pharyngitis/ tonsillitis if 3+ Centor criteria

Offer all patients: advice about symptom management and usual natural history of illness and total illness length

Centor criteria:tonsillar exudate, tender anterior cervical LN or lymphadenitis, history of fever and absence of cough

What is a Clinical Assessment?

- History
  - Presenting symptoms
  - Used of OTC medications
  - Past Medical History
  - Risk Factors
  - Comorbidities

- Examination “if indicated”

Treatment Options

- No treatment
- Delayed treatment
  - Either now with instructions or to pick up later
  - Start if symptoms do not settle/get worse
  - Advice to re-consult if despite treatment things get worse
- Immediate treatment

Which adults get an immediate prescription?

- Clinically unwell
- Comorbidities
- Signs/symptoms of serious complications
- >65 with acute cough and 2+ of the following or >80 with acute cough and 1+ of the following:
  - Hospitalisation in previous year
  - Diabetes mellitus
  - History of CCF
  - Currently taking oral glucocorticoids

Natural History

Acute otitis media	4 days
Acute sore throat	1 week
Common cold	1 ½ weeks
Acute rhinosinusitis	2 ½ weeks
Acute cough/bronchitis	3 weeks

Evidence

- Dowell J, et al. (2001) A randomised controlled trial of delayed antibiotic prescribing as a strategy for managing uncomplicated respiratory tract infection in primary care[1]. Assess delayed antibiotic prescribing as a strategy for acute cough
- Open RCT; 191 adults; 22 Scottish GP practices
- By GP's usual practice would have received antibiotics
- Randomised to immediate or delayed (1 wk) antibiotics
- Outcomes: symptom duration, prescription uptake, patient satisfaction, patient enablement, subsequent consultation rates

1. British Journal of General Practice 51: 200-5

Evidence

- Results:
- 78% patients returned the questionnaires
- 43/95 in delayed arm collected prescription
- More dissatisfaction with treatment in delayed arm
- Those who received antibiotics more likely to consult in future
- However study was underpowered

Patient Expectations

- Qualitative analysis of consultations for acute cough
- 8 German GPs, 42 patients over 2 weeks
- Rate of prescriptions 24%
- Lots of implicit requests for antibiotics but no explicit requests
- Lack of patient-centred consultation style

1. Altiner A, Knauf A et al (2004) Acute cough: a qualitative analysis of how GPs manage the consultation when patients explicitly or implicitly expect antibiotic prescriptions. Family Practice 21(5): 500-506

Patient Expectations

- Questionnaire Study, Australia
- 22 GPs, 336 of their patients
- Patients expecting a prescription for a new illness almost 3 x more likely to get one
  - OR 2.9 95% CI 1.3-6.3
- Doctors expecting patients to expect a prescription were 10 x more likely to get one
  - OR 10.2 95% CI 5.3-19.6

1.Cockburn J, Pit S (1997) Prescribing behaviour in clinical practice: patients' expectations and doctors' perceptions of patients' expectations-a questionnaire study. BMJ 315: 520-523.

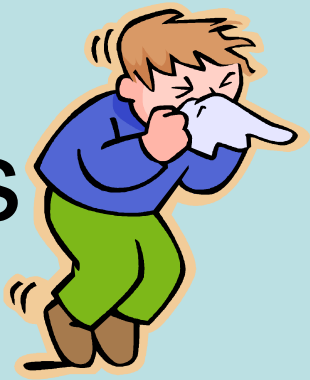
Evidence

- Single blinded RCT (UK)
- Acute bronchitis in adults
- 212 patients given delayed prescription
- 106 also had information sheet

- Patient information leaflets help reduce antibiotic usage[1]

1. Macfarlane J, Holmes W, Gard P et al. (2002) Reducing antibiotic use for acute bronchitis in primary care: blinded, randomised controlled trial of patient information leaflet. BMJ 324: 91-4.

Preventing Complications



- General Practice Research Database 3.36 million episodes of RTI; July 1991-June 2001; 162 practices[1]
  - Sore throat: NNT to prevent quinsy
    - 4300 (p=0.021)
  - Otitis media: NNT to prevent mastoiditis
    - 4064 (p=0.008)
  - Chest infection: NNT to prevent pneumonia
    - 39 for those ≥65 years of age (p<0.001)
    - 119 in 16-64 year olds (p<0.001)

1. Petersen I, Johnson AM, Duckworth G et al. (2007) Protective effect of antibiotics against serious complications of common respiratory tract infections: retrospective cohort study with the UK General Practice Research Database. BMJ 335: 982.

Evidence

- Utrecht GP research network
- LRTI; aged ≥65 yrs; 1997-2003[1]
- 3166 episodes in 1693 patients
- LRTI *included* pneumonia, acute bronchitis
- *Excluded* immunosuppressed, recent antibiotics or recent hospitalisation
- End point: hospitalisation or death in 30 days

1. Bont J, Hak E, Hoes AW, Schipper M, Schellevis FG, Verheij TJM A prediction rule for elderly primary-care patients with lower respiratory tract infections Eur Respir J 2007; 29: 969-975.

Predictive characteristics

- Exacerbation COPD 2
- Pneumonia 4
- Age ≥ 80 2
- CCF 1
- Diabetes 2
- Oral glucocorticoids 3
- In hospital in past yr 1x 2
- ≥ 2x 3
- Abx in previous month 2

Hospitalisation/Death

- Derivation cohort:
  - Low risk ≤ 2 3.2%
  - Medium risk 3-6 9.9%
  - High risk ≥ 7 mortality 30.9%

- Validation cohort
  - Low risk ≤ 2 mortality 5.3%
  - Medium risk 3-6 mortality 14.5%
  - High risk ≥ 7 mortality 22%

Cochrane Review 2007[1]

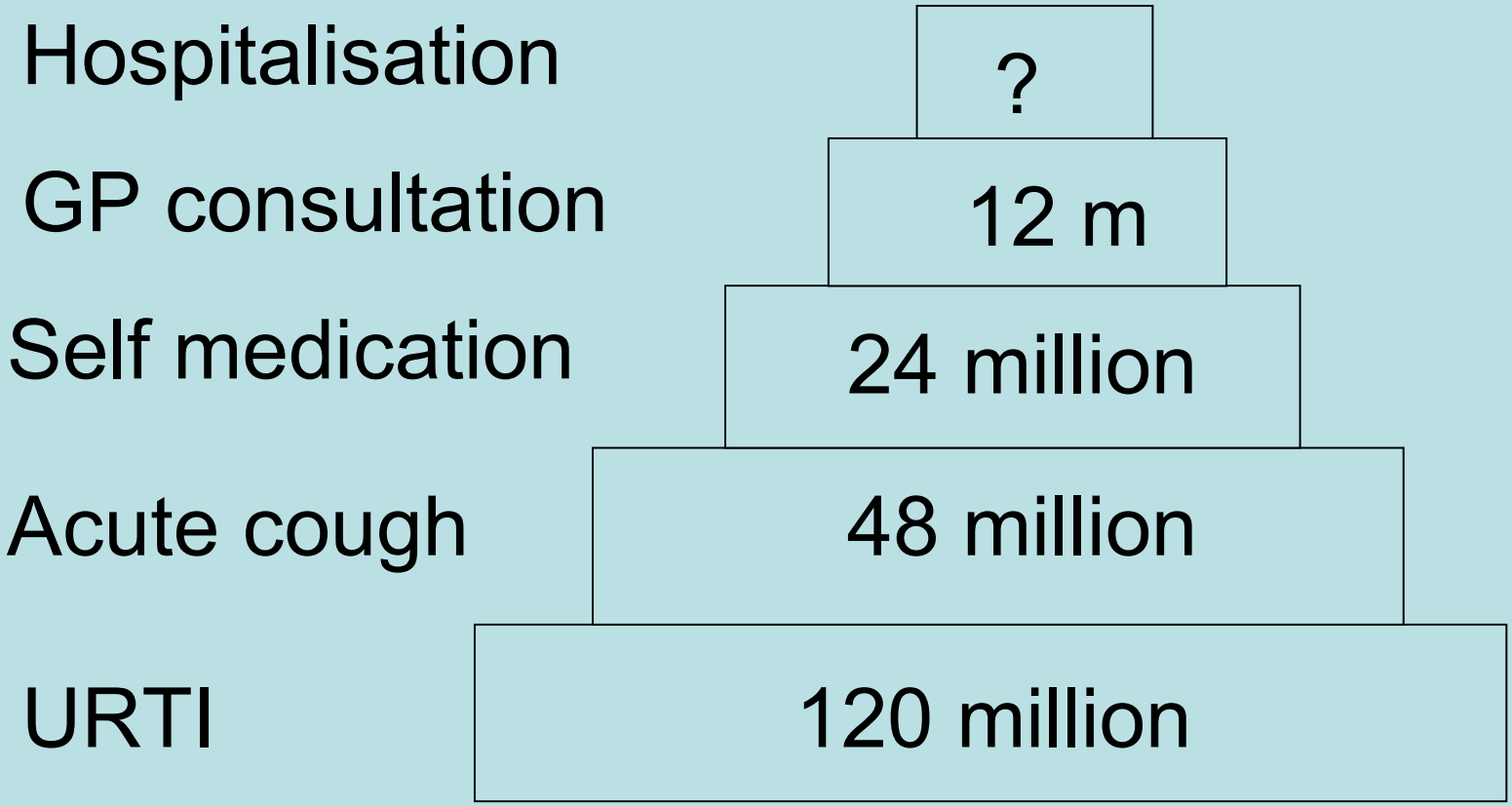
- Delaying or avoiding antibiotics reduces overall use of antibiotics for RTIs
- Delay may reduce patient satisfaction
- Delayed antibiotics overall have little benefit over not prescribing them at all when safe to do so

1. Spurling GKP et al Delayed antibiotics for respiratory infections. Cochrane Database of Systematic Reviews 2007, Issue 3.

Acute cough

- Lasts < 3 weeks
- More common in women
- Post-viral cough can last beyond 3 weeks
- Usually settles within 8 weeks

Incidence of acute cough



http://www.brit-thoracic.org.uk/Portals/0/Clinical%20Information/Cough/Guidelines/coughguidelinesaugust06.pdf

Pharmacological Treatments

- Most cough suppressants are ineffective
- Limited evidence for:
  - Dextromethorphan
  - Menthol

Who to CXR

- Haemoptysis
- Weight loss

} Suspicion of cancer

- Breathlessness
- Fever (?> 4 days)
- Chest pain
- Suspicion of inhaled foreign body

Pneumonia

- No reliable set of clinical signs or symptoms can diagnose pneumonia[1]
- Clues…
  - Fever
  - Respiratory rate
  - Heart rate
  - Abnormal signs (crackles, bronchial breathing)

1. Metlay, JP, Kapoor, WN, Fine, MJ Does this patient have community-acquired? Diagnosing pneumonia by history and physical examination. JAMA 1997; 278 (17) 1440-1445.

CRB-65

- Confusion (MTS ≤ 8/10)
- Respiratory Rate >30
- Blood pressure <90mmHg s / ≤60 mmHg d
- ≥ 65 years

- 0=1.2% mortality
- 1=5.3% mortality
- 2=12.2% mortality
- 3=32.9% mortality
- 4=18.2% mortality

Lim W S, van der Eerden M M, Laing R, Boersma W G, Karalus N, Town G I, Lewis S A and Macfarlane J T Defining community acquired pneumonia severity on presentation to hospital: an international derivation and validation study Thorax 2003;58;377-382.

COPD

- Increased sputum purulence
- Increased sputum volume
- Increased breathlessness
- Standby antibiotics; standby steroids
- Contact primary care team if symptoms not improving
- Liaison with specialist respiratory nurses

Asthma

- Dry cough & SOB
- Increased inhaled medication
- Oral prednisolone 40mg/day (≥5 days)
- Assess for admission
- Antibiotics?
  - Purulent sputum (mucus plugging??)
  - Suspicion of pneumonia

Bronchiectasis

- Increased volume of sputum
- Increased purulence of sputum
- Haemoptysis
- Increased breathlessness
- Sputum culture
- 14 days of antibiotics (standby)
- Chest physio
- Liaison with secondary care if not improving

- BTS statement on criteria for specialist referral, admission, discharge and follow-up for adults with respiratory disease

British Thoracic Society Standards of Care Committee

Thorax 2008; 63: i1-i16 (*March 2008*)

Red Flags

- Haemoptysis
- History suggestive of inhaled foreign body
- Change in voice quality
- Fever/malaise/purulent sputum
- Increasing breathlessness

Case History 1

- Mr B.O.
- 47 yrs old
- Normally fit and well
- 4 day history
- Sore throat
- Sneezing
- Nasal discharge

www.wikipedia.org

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Case History 2

- Mrs D.C.
- 79 yrs old
- COPD since 2003
- Still smoking 20/day
- 1 week history SOB
- Eggcupful green sputum
- Flecks of haemoptysis

www.blogs.orange.co.uk /tv/2007/06/index.htm

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Case History 3

- Mr S.R.
- 48 yrs old
- Type 1 Diabetic
- 2 day history of fever
- Acute cough
- Clear sputum

http://www.steveredgrave.com/fiveg.htm

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Summary

- Offer a clinical assessment
- Assess risk of complications
- Assess severity of illness
- Agree 1 of 3 prescribing strategies with patients
- Advise likely disease pattern
- Confirm when patient should reattend

Useful Internet Resources

- NICE www.nice.org.uk
- National Library for Health www.library.nhs.uk
- BTS www.brit-thoracic.org.uk
- ERS www.ersnet.org